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THE ART
OF
VOICE-PRODUCTION

WITH
SPECIAL REFERENCE
TO THE
METHODS OF CORRECT BREATHING

BY
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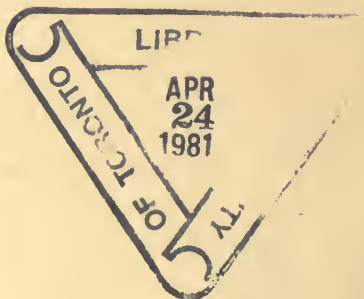


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MANY and valuable are the works on vocal culture published of late years; they unquestionably attest the growing interest in this important branch of art; and, although further efforts to elucidate and expound the correct theory of the voice might appear superfluous, I hope to be pardoned for begging the privilege of contributing my little mite to the rich store of valuable knowledge already acquired.

The discovery of the Laryngoscope has done much to solve the problem of the true mechanism of the human voice, which, for ages, was a subject of profound mystery. Science was not slow to take advantage of this new means for physiological and pathological research, and the important scientific discoveries recorded in almost countless works on the throat

and diseases affecting it, sufficiently demonstrate its glorious results.

But has the knowledge of vocal culture advanced with equal strides in the path of research and discovery? Why so many divergent opinions on the subject of singing? Do the vocal teachers of to-day devote the serious and earnest study to their profession which is required of all men wedded to scientific pursuits? If so, why has the wonderful art of Porpora well nigh departed from amongst us? Why so few perfectly cultivated voices? Or, is it, perchance, because the teacher does not thoroughly know how, and the pupil is not willing to master absolutely, the many difficulties which stand in the way of obtaining a perfect vocal technique?

These are some of the questions which have often occurred to me and to which I shall try to answer in the course of the following pages; and I shall endeavor to present the subject in a clear and practical form. Consequently I do not address myself to

scientists, but I write mainly for all those wishing to be guided by clear common sense rules and precepts, in the discovery of an easy, effective, and natural method of singing. Therefore this little book is especially offered to those of my own profession who will approve and sustain me in elucidating the many problems of vocal culture. It is my purpose to examine the voice in its cause, which is breath, and in its effect, which is tone.

GENERAL REMARKS CONCERNING BREATH.

The correct use of breath in singing is the very essence of vocal art, and as such it is the key-note to success or failure ; it is therefore of the utmost importance to gather clear ideas concerning the mechanism of the respiratory process.

Starting out with the universally acknowledged law, that all the operations of our nature, when in a condition of perfect health, proceed normally and unconsci-

ously to us, breathing for singing should not deviate from nature's usual orderly and peaceful condition. Consequently the correct breath for singing should be the exaggerated but natural breath of perfect repose.

In order to satisfy yourself of the truth of this assertion, watch, if you please, the inspiration and expiration of your pet, sleeping, perched up in his cage; or observe, if you will, your favorite rover, slumbering on the rug, at your feet; examine the regular rising and falling of the chest-walls during the breathing process.

This simple illustration would seem to furnish almost a sufficient explanation for all practical purposes on the subject under consideration; but our ignorance or our over-anxiety in the pursuit of any study, causes us frequently, either to fall short in our appreciation, or to exaggerate and pervert the methods in striving to acquire knowledge.

So it is with reference to singing.

Often the all-important and essential question of correct breathing is wholly ignored in teaching, or, it is very imperfectly taught. Alas! it is too often taught and practiced to the detriment and serious injury of the pupil.

The foregoing remarks would seem to make it plain that the process of correct breathing in singing is by no means rightly understood nor uniformly practiced. Experience has taught me, that three distinct forms of breathing are in vogue: the clavicular, the costal, and lastly the correct abdominal breathing.

CLAVICULAR BREATHING.

The spasmodic process of inspiration termed clavicular, collar-bone, or scapular breathing, which consists in convulsively uplifting the shoulders, and in inhaling a partial breath, thus filling the upper air-cells of the lungs only, and in violently and unnaturally compressing inwardly the

walls of the abdomen, is absolutely detrimental or highly injurious:

- I. To the pharynx or throat-outlet for sound.
- II. To the laryngeal muscles called upon to act during phonation or voice-production.
- III. To the muscular action of the chest-walls.
- IV. To the organs contained within the cavity of the abdomen.

I. Clavicular breathing injurious to the pharyngeal muscles.

This spasmodic collar-bone breathing is injurious to the pharyngeal or throat-muscles, because during the abnormal straining for tone-production, the sound-wave being already deficient in fullness and sonority, on account of the lack of breath, is still more narrowed and compressed in the throat, in order to make up in intensity that which is lacking in volume; hence, the muscles of the base of the tongue become rigid, pulling at the same time the

larynx unnaturally upward; thus often are produced the harsh, muffled, throaty, tremulous tones, hereafter to be described; and these peculiar voice-conditions are too prevalent, even among public singers.

The soft palate likewise frequently sags down, or is held rigid, and the voice shows a more or less marked tinge of the offensive harsh or nasal quality.

II. Clavicular breathing injurious to the laryngeal muscles.

The spasmodic or clavicular breathing method is injurious to the laryngeal muscles called upon to act during phonation, because the vocal cords or ligaments are to produce, as occasion may require it, a loud tone, with only a partial breath, and in the effort to emit a loud tone, there necessarily follows an abnormal strain or forced contraction upon all the laryngeal muscles, and this result is noticed in the flush or contortions of the singer's face, in the unnatural swelling of blood vessels and muscles in the throat and neck, and

especially in the harsh, screechy, and unmusical tones emitted from such a throat.

III. Clavicular breathing injurious to the action of the lungs.

The abnormal clavicular breathing process is injurious to the action of the lungs, because the supply of air being already deficient, the muscles of the chest-walls are called upon to a painful degree of compression, in order to furnish the required motive-power, breath. This injudicious method of inspiration produces necessarily weakness and exhaustion, and is also a prolific source of evil consequences, particularly when the lungs of the vocalist are constitutionally weak. Mr. Lenox Browne of London, a throat-specialist of reputation, in a work of his entitled: "Medical hints on the production and management of the singing voice," says: "Clavicular breathing is a method of respiration totally vicious, and to be avoided. By it, the whole lower part of the chest is flattened

and drawn in, instead of being distended; consequently, the lower or larger part of the lungs is not inflated. It is a method never exercised by nature in a state of health, but only when from disease, either the abdomen or chest-muscles cannot act, and it is a method least efficacious in filling, as it is the one calculated to most fatigue the chest; for it compresses the vessels and nerves of the throat, and this leads to engorgement and spasmodic action of the muscles."

IV. Clavicular breathing injurious to the organs contained within the cavities of the abdomen.

The spasmodic clavicular mode of breathing is highly injurious to the organs contained within the cavities of the abdomen, and the method is advocated by many vocal teachers under the title of "Abdominal method," without a true conception of its real intent and possible pernicious results. Thus not infrequently do lady singers find themselves victims of the

serious weaknesses incident to their sex; they realize then, but too late, the sad effects of practicing the so-called "Abdominal method."

The evil consequences of this pernicious method of breathing and singing have been treated of by Dr. Clinton E. Wing of Boston, in an able essay.

Dr. Langmaid of Boston, in treating of the same subject says: "I have no doubt that injuries such as Dr. Wing describes have been produced by attempts at Abdominal (diaphragmatic) respiration.

"I have known the digestive functions disturbed, pain and soreness in various parts of the abdomen produced, and, in one case, the occurrence of prolapsus uteri brought about during the act of attempting to use the abdominal method of breathing in singing.

"The injuries result not from properly conducted abdominal respiration, but from a wrong method of using it, and a misconception of its legitimate use and limit.

Such misconception is common enough among singing teachers and their pupils."

"Abdominal respiration gives the singer the greatest control of the column of air to be used in vocalization. If, however, the proper action of the muscles (relaxation) during inspiration does not precede the expiratory effort (contraction), the contraction is not only productive of imperfect sounding processes, but may be the cause of injury to organs which are so situated as to be influenced by the pressure exerted by the contraction.

"The tendency of the abdominal walls to return to a normal position, out of which they have been carried during inspiration, is sufficient to regulate the flow of air during ordinary singing. A forced contraction results in an increased blast of air, which is needed to give greater intensity to tone.

"The common fault consists in the attempt to contract from an already retracted abdominal wall, the inspiration

having been limited to a superficial thoracic (clavicular) respiration. If now, there is added the restrictive action of a close and unyielding corset, any of the movable organs in the abdomen or pelvis must yield to the 'Vis a tergo' of the abdominal contraction. 'A priori' with regard to the effect upon the uterus, retroflexion, or retroversion, would be the common forms of displacement, unless a tendency to prolapsus existed."

The reader, who has carefully noticed the foregoing remarks, which I have thought important to introduce in their entirety, will perceive that the breath question is of no mean importance, and that it is impossible to overrate its consequences for good or evil results. He will also remember, if he has been a vocal student at any time, how little stress was laid on the matter of correct breathing, how imperfectly many vocal teachers explained and understood that essential requisite to successful vocalization; and it

will then appear plain where was to be traced the real cause of success or failure in his vocal training.

COSTAL BREATHING.

The defective mode of inhalation termed costal, lateral, or rib-breathing, consists in taking, as it were, only half a breath by extending the ribs sideways, and excluding in part or wholly the natural action of the abdominal walls. Although costal or rib-breathing is to be deprecated in general, especially with ladies addicted to the pernicious habit of tight lacing, yet this mode of inspiration is more natural with them; nevertheless, as the sequel will show, it is not perfect breath-action, and should therefore be avoided by the singer.

There is not the least doubt that the real dearth of singers, gifted both with superb tone-producing powers, and with the ability to execute or vocalize with the clearness and evenness which is exacted from a first-class instrumental performer,

may be attributed largely to the neglect of too many teachers who fail to continually impress upon the minds of their pupils the great importance of correctly governing the vocal motive-power.

It is a matter of history, and related in Mme. Seiler's book, "The Voice in Singing," how, a hundred and fifty years ago, the great singing-master Porpora trained his pupil Perugia to sing two full octaves, with successive trills up and down in one breath. How Farinelli competed with a trumpeter who accompanied him in an Aria. "After both had several times dwelt on notes in which each sought to excel the other in power and duration, they prolonged a note with a double trill in thirds, which they continued until both seemed to be exhausted. At last the trumpeter gave up, entirely out of breath, while Farinelli, without taking breath, prolonged the note with renewed volume of sound, trilling, and ending finally with the most difficult of roulades." Could any

one infer from the above well-nigh fabulous narrative, that Porpora taught the clavicular or rib-breathing methods?

Would it not appear incredible that up to this day teachers, and even conservatories of music, should be found, deliberately teaching imperfect methods of respiration? Have not many of my readers noticed how frequently operatic singers hailing from the "Conservatoire de Musique de Paris" were afflicted with the distressing and never-ending tremolo? How can it be otherwise, when the pupil is told that the proper method of inspiration consists in "flattening and crowding inwardly the abdomen, and in bulging out the chest." "Dans l'action de respirer pour chanter, en aspirant il faut aplatir le ventre et le faire remonter avec promptitude, en gonflant et avançant la poitrine." *Méthode de Chant du Conservatoire de Musique.* (à Paris.)

The tremolo mentioned above should receive more than a passing notice. Mr.

Emil Behnke in his work, "The Mechanism of the Human Voice," says: "The tremolo arises almost invariably from a weakness of the muscles of the diaphragm."

As the term diaphragm is used here for the first time, it would be well perhaps to describe it somewhat. Anatomy informs us that the diaphragm is a movable muscular floor to the cavity of the chest, and forms a partition or dividing wall between the latter and the cavity of the abdomen. When at rest, it is arched upwards like an inverted basin, but when its muscular tissues contract during inspiration it flattens and descends, and in this manner it increases the chest capacity at the expense of the abdomen.

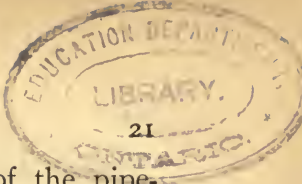
I differ with Mr. Behnke concerning the real causes of the tremulous voice; my reasons therefor will be given further on, when such tone-condition will present itself in its proper place for investigation.

NATURAL OR ABDOMINAL BREATHING.

Dr. Cohen of Philadelphia, in his excellent work, "The Throat and Voice," says: "The best efforts of elocution and singing are produced from a full chest of air inspired according to the natural or abdominal type."

This method of breathing includes the double function of inspiration and expiration. The inspiration consists in taking a full, easy, yet deep breath; abdominal inflation and costal expansion taking place together; that is to say: the diaphragm contracts and flattens at the same time that the ribs extend sideways—with this distinction, however, that ladies distend the ribs more prominently; whereas with men, expansion or distension of the abdominal walls is more pronounced. In other words, the correct breathing or inhaling process consists in inspiring the air naturally, down to the very base of the lungs, without any voluntary uplifting of

the shoulder-blades; in this manner the chest-walls expand laterally, drawing the ribs slightly upwards, while the diaphragm descends, pushing downwards the abdominal organs; thus the cavity of the chest is widened in every direction, and the air passes through the trachea, or wind-pipe, and bronchial tubes to the air-cells of the lungs. Now, when the singer has learned to fill his lungs with ease and comfort to their full capacity, he must study to have perfect control over his expiration. This expiration is wholly to be governed by the length of the phrases to be delivered, whether for singing or speaking purposes, and herein lies the real power of expression. During inspiration the chest-muscles were distended, but during expiration they become contracted, together with the muscles of the diaphragm, with a drum-like tension. The contraction regulates the degree of tone-expansion, or the intensity of tone required in delivering a musical phrase, and is to the voice what



the weight is on the bellows of the pipe-organ, with this distinction; that the contracting, diaphragmatic, and chest-muscles during expiration in singing, are regulated by the will of the vocalist; and the study of vocalization lies in the fact that these organs must be educated by the proper daily practice to furnish the required amount of tone-power, from the softest possible sound to the most glorious vocal outburst; and such command of breath-power is gradually acquired, and the degree of perfection with which it is governed is readily discerned in the quality and quantity of tone produced.

Moreover, it is the aim of all good singers who cultivate a proper method of breathing, to inhale the largest amount of air with the least muscular effort, and without audible noise; hence, in the quietest possible manner, and then so completely to hold in the inhalation that not the smallest fraction of it shall pass out unvocalized. In other words, the

breath thus controlled will enable the singer, not only to keep the chest fully supplied, but he will learn at the same time that he must govern the supply in such a manner that, without losing the drum-like tension of the diaphragmatic and chest-muscles, he will be able to keep the vocal cords in a vibrating condition, pouring forth an even, though ever so small a jet or flow of air; and furthermore, if holding back the expiration just described, he is conscious of a reserve breath-power, and is therefore capable of increasing or decreasing the blast of air at will, repeating the operation again and again without exhaustion, his breathing method is correct, and the length of time in which he is able to protract such phonetic expiration without undue fatigue, determines the degree of excellence of the breath-development.

Some of my readers, no doubt, will think that too much space is devoted to the description of the correct breathing

method. But judging from my own experience, if any success is obtained with the pupil, it is almost wholly to be attributed to the never-ceasing and close watchfulness over the breath-action. So essentially true is this assertion that the art of singing might not improperly be defined, the art of breathing. But in order that I may not appear too dogmatic, let me quote Dr. L. Browne, in support of my views. Speaking of the correct method of respiration just described, which was taught so successfully by the old Italian school of the last century, of which I am myself an enthusiastic devotee, he says: "There is just as much teaching of what may be called the decorations of the voice in the present day as then; but the art of forming a solid basis of voice by long exercise on a right method of breathing seems to be almost lost, or if not lost, overlooked."

I have heard the question often raised: should respiration be carried on through the nose or mouth? The answer is plain:

respiration is normally carried on through the nostrils; otherwise, aside from other reasons, we may ask, why the presence of the prominence which adorns the human countenance; it might as well have been omitted in the creative act. But at the same time it must be understood: breathing through the mouth is unavoidable during the act of speaking or singing. Yet whenever a sufficiently long pause occurs between two phrases in singing, it will refresh the mucous membrane of the throat to breathe through the nostrils. But during the non-use of the voice, hold the mouth closed during both sleeping and waking. Tyndall says: that if he could leave a perpetual legacy to mankind he would embody it in the words: "Keep your mouth shut;" and so prolific are the throat-troubles caused by oral respiration that Catlin adds: "Shut your mouth and save your life."

A great deal more might be said on this subject, but I will dismiss it with one or two remarks.

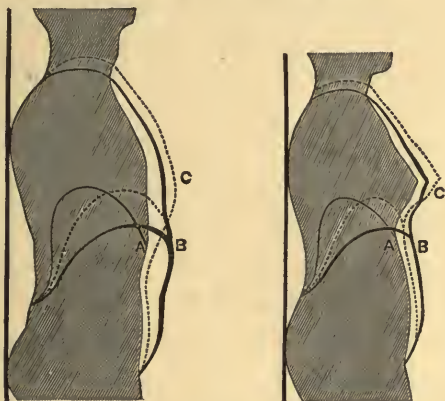
Breathing quietly through the nose, or sipping the air, as it were, through nearly closed lips, will often increase the tendency to take a deeper breath, and will consequently also tend to dispel the spasmodic, clavicular habit; and thus will greatly help to control the nervous singer. Most of my readers are doubtless aware that singers who are affected with stage fright may sometimes quickly recover themselves when not too much overcome with fear, by taking a few, slow, deliberate, rhythmic inhalations through the nostrils, because this breathing process is antagonistic to the panting gasp occasioned by intense agitation.

Finally, it is among the possible occurrences that particles of dust or other impurities which permeate the atmosphere more or less at all times, may irritate the throat and lead to certain disorders. Again, breathing cold air through the mouth, besides drying the mucous membrane of the pharynx and larynx, exposes

these parts to unnatural and sudden reduction of temperature, in consequence of which, often temporary hoarseness is produced. But particularly, when the vocal organs have been over-exercised and overheated by singing or speaking in warm rooms or halls, should the singer or speaker refrain from exposing himself, without due precaution, to the very cold or damp outdoor air ; and surely, he should not breathe with open mouth, unless he desires to be visited with serious disorders of the respiratory organs, such as congestion of the larynx or lungs.

In the preceding pages I have attempted to show the vast importance of correct breath-action in singing. It is impossible to overrate its estimate ; since, all vocal success depends on a clear apprehension of its import ; and, if the general health-condition is at all to be benefited, it will wholly depend on the correct management of the right breathing-method.

Diagrams illustrating the varying capacity of the chest according to the method in which the lungs are inflated, taken from Lenox-Browne's work above mentioned.



The front outline A of the shaded figure represents the chest after full expiration; the black continuous line B gives the increase in size of the chest, and the descent of the diaphragm, indicated by the curved transverse lines, in full abdominal respiration. The dotted line C shows the retraction of the diaphragm and of the abdominal muscles in forced clavicular inspiration; the varying thickness of the line B indicates the fact of healthy breathing in man being more abdominal than in woman. The outlines of forced inspiration in both sexes are remarkably similar.

Now that the motive power of the human voice has been detailed at some length, one would naturally wish to know what vocal

mechanism this breath-power does set in motion during phonation, and the answer to this question brings me to the

Larynx or voice-box.

The wonders of this marvelously constructed human organ will probably never be wholly revealed. But enough is known for all practical purposes, and as the larynx has been very ably and minutely described by eminent throat-specialists, to whose interesting works I would refer my readers, I will not dwell very long on its anatomical description.

Few physiologists will deny that the most remarkable apparatus of the body is that of the larynx in which the human voice is produced. The essentials of voice-production are threefold.

First, the lungs and wind-pipe, which convey the air to the second essential, the larynx, which contains in its interior the necessary apparatus for the production of vocal sound; and third, the pharynx, nose and mouth-cavities, which

serve as a resonator and modifier of these sounds.

The larynx, the most essential and interesting part for our purposes, consists of a cartilaginous frame-work or box, made up of five parts.

First, the thyroid cartilage, which is the largest, consists of two lateral plates joined together in front at more or less of an angle, which terminates above in a slightly prominent notch known as Adam's apple. This cartilage serves as the protector of the delicate apparatus concerned in voice-production which lies behind it; immediately below it lies the second of these cartilages—the cricoid, a ring-shaped cartilage surmounting the wind-pipe and forming the basis of the larynx.

Thirdly, the arytenoids, two small triangular cartilages located upon the upper and back edge of the cricoid, to which they are attached by means of beautifully constructed little joints. These cartilages are of special interest to us, as being the

ones to which the ends of the vocal cords are attached.

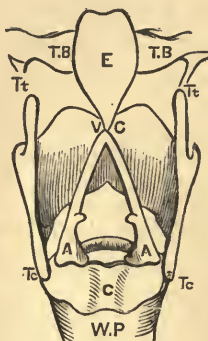
Lastly, the epiglottis, a broad leaf-shaped cartilage located at the upper part of the larynx, just behind the base of the tongue. All these cartilages which I have just described are connected by ligaments, and the cavity which they form is lined by mucous membrane, and richly supplied with sensitive and motor-nerves and blood-vessels.

The vocal cords, also termed bands, reeds, ligaments, etc., are two firm, pearly-white, glistening bands of ligamentous tissue which are attached closely together at a fixed point on the inside angle of the thyroid cartilage, and thence pass backward in a horizontal line across the larynx, to the inner face of the triangular arytenoid cartilages. Their inner free edge is thin and sharp, and covered by a very delicate investment of mucous membrane. Their outer edge is attached to a muscle called the vocal muscle, which acts as a relaxer of the vocal cords.

During quiet respiration the vocal cords lie at the sides of the larynx, leaving a triangular space between them for the passage of air. But when called into action by the act of phonation, they approach one another to the middle line of the larynx by means of a rotation of the arytenoid cartilages on their basis, through the action of certain muscles called the adductor muscles.

The vocal cords now lying with their edges exactly parallel to each other, still further approach so as to nearly close the delicate elliptic space left between them, which is termed the glottis. The air, as it passes from the lungs, escaping through this small opening, impinges against the edges of the vocal cords with a force which sets them vibrating; the sound thus produced constitutes vocal sound. Or, again, they may move together or apart, be drawn tense or relaxed, as the various phases of vocalization require—all these movements being accomplished by means of complicated, yet beautiful and delicate sets of muscles.

All these points may be thoroughly understood by referring to the annexed diagram taken from the work of Mr. L. Browne, before mentioned.



CARTILAGENOUS DIAGRAM OF SOME OF THE LARYNGEAL PARTS.

- W. P. Windpipe or trachea at the base of the laryngeal structure.
- C. Cricoid cartilage resting on the top of windpipe.
- Tc. Tc. Thyroid cartilage articulating with cricoid.
- A. A. Arytenoid cartilages.
- V. C. Vocal cords, wide open, as in inhalation, showing their point of origin in the thyroid cartilage and their attachments to the arytenoids.
- Tt. Tt. Thyroid cartilages articulating with cricoids and with tongue bone.
- T. B. T. B. Tongue bone connected with thyroid.
- E. Epiglottis.

It is a mistake to assert that neither anatomy, nor physiology, nor laryngology can possibly in any way benefit the study of the voice. One might as well attempt to prove that the manufacturer has no need of chemistry. The well-authenticated merits ascribed to, together with the incalculable benefits derived from the intelligent use of the laryngeal mirror in relieving suffering humanity, as well as in diagnosing the physiological and pathological condition of the throat and larynx, would seem at this date quite uncontroversial; and yet one reads, not infrequently, periodicals on art and science, which question the high prerogative so justly claimed for the laryngoscope. Thus I find in Brainard's Musical World the following: "It is the opinion of not a few that the laryngoscope is of no practical value to the vocal teacher, in as much as the person that is operated upon, having to stretch out the tongue, and a glass being placed in the mouth, cannot produce a nat-

ural tone. You had better let the laryngoscope alone." A statement which is not true, because the singer's throat can, in a large proportion of instances, be examined without stretching out the tongue and without touching the velum with the mirror, so that the normal physiological movements during vocalization are not disturbed.

Moreover, the writer of the above-mentioned assertion, answering his inquiring correspondent, was evidently not aware that the instrument could be used advantageously for other purposes besides those he mentions. The sequel will tend to show that the conscientious vocal teacher is not complete unless he possesses such physiological knowledge as may be expected of him to-day, because all such aids of science are essential to his perfect success.

The various parts of the vocal mechanism are part of the human fabric, and are subject to disease. Now the singing master who is capable of appreciating the signs and symptoms of the commoner troubles

which may affect the vocal organs of his pupil, will at least be warned against impending mischief, and may thus save the voice and throat of the latter from more or less serious harm; whereas the instructor, who is totally ignorant of vocal hygiene, may possibly do more harm than good. There is not the least doubt that a vast amount of mischief is done by persons ignorant both of the proper breathing methods and of the hygiene of the throat. A misapprehension of the correct breathing mechanism leads to the pernicious results mentioned elsewhere. The harm done to throats by teachers or singers regardless of the hygiene of the voice and throat could be testified to by many a throat-specialist.

The use of the laryngoscope, which every vocal teacher would do well to understand, if only to a limited extent, will show him the condition of the vocal ligaments and other laryngeal parts. On introducing the small laryngeal mirror in

the singer's mouth, without touching the tongue, moving the back of the mirror gently against the uvula, so as not to touch the posterior pharyngeal wall, and directing him to say ē, generally with the tongue protruding, a view of the larynx will be obtained, and the vocal cords will readily be distinguished by their peculiar color. When in a healthy state their color is mother-of-pearl, white and glistening. Any deviation from this normal standard constitutes disease. Of these diseases, laryngitis is by far the commonest. It may pass through various stages, from a simple inflammation, in which case the vocal cords lose their glistening attribute, or are tinged with a light pinkish color, to a severer grade of laryngitis, when the color will vary from a deep red to a purplish hue. But as everybody has not the opportunity to learn the use of the laryngoscope, it is safe to state in general that the teacher should not allow the pupil to practice singing when the latter suffers

from a severe cold, accompanied with hoarseness, or when there exists even a remote sensation of pain in the larynx, or when the tone of voice is decidedly veiled.

But right here is a case where the advantage of knowing how to use the laryngeal mirror may be demonstrated. Hoarseness is two-fold in its cause, either as resulting from disease, or as proceeding from abnormal use of the voice. Thus a pair of perfectly healthy vocal bands may be congested and produce hoarseness by a defective use of the voice. For, if the vocal ligaments or cords, previous to singing, when examined, were of the color of mother-of-pearl, white and glistening, and produced at first clear tones, and if, in the process of the vocal practice the voice becomes hoarse, either during the singing lesson, or as manifested in speech, immediately after singing, and the vocal cords have become congested and reddened, this condition would go to prove that the voice had been improperly or excessively

used, and that consequently such method of singing was vicious.

It may be inferred from the foregoing remarks that there exist certain laryngeal conditions when the voice should either not be used at all, or when it should be exercised with certain restrictions.

The use of the voice should be absolutely forbidden when from exposure, over-use, or abuse of the voice, pain and irritation are experienced in the larynx or pharynx during vocalization; or, again, when decided veiling of tone is produced under similar conditions.

Much more might be said on this interesting subject, but it does not lie in my province to touch upon matters of a purely medical nature.

Vocalists with a throat trouble, which there is good reason to suspect may be organic, would do well, in the first instance, to consult a skillful specialist, on the principle that an ounce of prevention is often worth a pound of cure. A few

applications to the vocal ligaments or throat, wherever the trouble may be, will often prevent a more serious chronic development.

The voice should be exercised with certain restrictions:

1. With beginners.

2. With persons having weak throats or lungs, or using their voice abnormally.

1. The vocal aspirant, just beginning to use the muscles of the larynx, should be guided by the same rules of common sense which preside over the exercise of any kind of muscular development. The judicious master of physical gymnastics does not proceed at once to work his young athlete to fatigue and exhaustion; but, on the contrary, he very slowly and gradually develops his muscular power, and thus, little by little, fits him for increased endurance.

So it is with vocal training. It is a well established physiological fact that whatever muscles of the human frame

are undergoing severe exercise, there will be a corresponding tendency of the blood towards those parts. But if this muscular exercise is violently and unduly protracted, the muscles will become engorged, inflamed, weakened, and even sometimes temporarily paralyzed. Indeed, it is in the matter of singing as it is with all muscular practice. It is not the quantity but the quality of the work which is productive of genuine strength; and the judgment of the vocal trainer, in this particular, is one of the tests of his ability.

Now, as to the length of time allowable for vocal practice, it varies with different cases; therefore no fixed rule can be laid down; although it has been my custom generally to advise the practice of vocal gymnastics three times a day, from about twenty to thirty minutes each time, and at stated intervals. However, when in the course of the vocal studies the pupil's throat feels tired, a short rest should always ensue.

2. Persons afflicted with weak chests or throats, the former either constitutional or acquired, the latter in consequence of abnormal use of voice, must be made to practice vocal gymnastics with discretion. As regards the first, there can be no question that the process of deep methodical inspirations, elsewhere spoken of, can but favor the development of the chest and lungs; but the latter, namely persons afflicted with weak throats and lungs, should be limited as to duration of vocal practice as well as in compass. Generally speaking the lower notes of the voice are to be used exclusively a few minutes at the time, with a view to produce a broad, yawning or gaping tone, till a free and easy emission has been developed. If this particular vocal exercise were practiced intelligently, by clergymen, speakers, or teachers suffering from weak throats, it would prove of incalculable value to them. Moreover, a distinct idea is to be imparted to the vocalist of the correct breath-action,

and he must endeavor to produce as soon as possible the full sonorous tone-wave, but with moderate power. Such proceeding will cause a gentle and progressive muscular strengthening; and as soon as the laryngeal and pharyngeal muscles concerned, which were weak at first and quickly tired, lose the lame and fatigued feeling, little by little, an additional note may be added to the compass, together with a gradual increase of tone-power, till the voice is able to bear with comfort a moderate crescendo, or tone-expansion.

The simple gymnastics just described, when properly applied to weak throats,—and there are many such—have frequently been productive of very satisfactory results. Many cases which have come under my observation might be related to demonstrate the value of the proper vocal drill.

Dr. Gordon Holmes in his work, "Voice Production and Voice Preservation," describes the benefits of vocal practice as follows: "The general well-being of the

constitution is promoted by voice-practice, because the wider chest-movements accelerate the circulation of the blood, at the same time that they cause a more ample flow of fresh air in and out of the lungs. The obstacle to expiration offered by the contraction of the glottis during phonation confers a greater penetrating power on the pulmonary air, which perforce permeates the minute bronchi, and distends the air-vesicles of the lungs more effectively; thus the blood attains a higher oxygenation and greater purity, by which qualities it gains in power of stimulating the vital activities of the various tissues of the body as it courses through them. Effete matters are freely cast off, and new and wholesome material is assimilated in increased amount. The appetite, so to speak, of the various corporeal structures becomes more keen, and they are thus subjected to an exalted nutrition. And, moreover, these effects have a certain permanency on account of the gains to the

thoracic capacity derived from the habitual increase of lung-expansion necessitated by constant vocal exercise."

I wish it were in my power to address myself to the trustees of all the educational institutions of our land. I would labor with them on the importance of establishing professorships of vocal training or voice-production and cultivation in connection with all our theological and oratorical schools, and I would urge them to appoint capable professors, whose duty it would be, first to discover if any throats of the applicants were physically or constitutionally incapacitated to perform the work of speakers or preachers, and thus save the latter from uselessness in their respective wished-for professions.

For it is sad to relate that hundreds, yea thousands of clergymen, many of them in the prime of their manhood, are shelved to-day, on account of their weak throats.

The competent authority would advise the student to look for some other profes-

sion, before he had lost three or four years of the better part of the young man's life in the pursuit of fruitless studies.

If on the contrary, wisely-directed vocal gymnastics could be taught to our young orators, be they clergymen, lawyers, or statesmen, imparting to them the knowledge of displaying their thoughts through the medium of spoken language uttered with enduring force and masterly control of voice, a want in education would be supplied which is sadly needed.

Leaving the more minute and detailed physiological and anatomical description of the wonderful organ of speech and song to men of science, I will consider the acoustic process of the voice in the more practical light of lyric art.

Physiological and anatomical knowledge of the muscular construction of the larynx, not being immediately governed by the will, is relatively of little practical value to the singer. The muscles of the vocal organs are intuitively, instinctively;

or automatically brought to act by actual conception of sounds. In other words, the wonderful adjustment of the laryngeal muscles which are requisite in the production of tone is usually guided by the auditory sense; rhythmic sounds which have previously been learned or committed are subsequently repeated or reproduced in accordance with the mental conception of the tone to be uttered. Such conception cannot be formed unless the sense of hearing has previously brought similar tones to the mind, and this process is independent of will-power.

Dr. Carpenter, the physiologist, says: "The muscular contractions which are concerned in the production of vocal tones are accounted voluntary; and yet it is easy to show that the will has no direct power over the muscles of the larynx. For we cannot raise or depress the larynx as a whole, nor move the thyroid cartilage upon the cricoid, nor separate or approximate the arytenoid cartilages, nor extend

or relax the vocal ligaments, by simply willing to do so, however strongly. Yet we can readily do any or all those things by an act of the will exerted for a specific purpose. We conceive of a tone to be produced, and we will to produce it; a certain combination of the muscular action of the larynx then takes place in most exact accordance with one another, and the predetermined tone is the result. This anticipated or conceived sensation is the guide to the muscular movements, when as yet the utterance of the voice has not taken place; but whilst we are in the act of speaking or singing the contractile actions are regulated by the present sensations derived from the sounds, as they are produced. It can scarcely but be admitted, then, that the will does not directly govern the movements of the larynx, but that these movements are immediately dependent upon some other agency."

"It may be safely affirmed that the simple utterance of sounds is in itself an

instinctive action, although the combination of these, whether into music or into articulate language, is a matter of acquirement, which is much more readily made by some individuals than by others. No definite tone can be produced by a voluntary effort, unless that tone be present to the consciousness during an interval, however momentary, either as immediately produced by an act of sensation, marked by an act of conception, or anticipated by an effort of the imagination."

Inasmuch as the complex muscular action of the larynx in tone-production is not yet fully accounted for, and, besides, cannot be brought under the immediate subjection of the will, where are we to look for the unerring evidence and proof of the perfect tone-condition?

The effects of tone are patent to any one. Its relative perfection, acoustically considered, is readily appreciated by the ordinary hearer, and is accounted pleasant or otherwise. Again, the æsthetic concep-

tion of tone, a certain individual relish in producing a satisfactory tone, certain physical sensations of full air-waves in the mouth, are all guides, though general ones, towards acquiring the ideal tone, with its accompanying perfect muscular action desired. Yet the perfect musical tone of voice is essential in singing, and determines, in a measure, the degree of excellence in song, and, as such, is desired and aimed at by all artistic singers. For, if singing consists in manifesting in the voice the beauty and power of the innermost thoughts and sentiments of the soul, capable of conceiving all that is grand and beautiful in art and poetry, then it is important that the vocal products should fitly correspond with such lofty conceptions.

Few voices, if any, possess that perfect tone quality, and the most gifted evince possibilities only; not, however, as a legacy of nature, but because of ignorance or of weakness of voice. Defective tone-

production and all faulty or imperfect emission of tone is, as a general thing, not innate, but induced from ignorance only, and can by intelligent practice be removed. Hence voice-training, which aims to discover and to develop a quality of voice such as shall completely satisfy the ambitious singer and the discriminating public.

Tyndall, Helmholtz, Müller, and many other writers have treated the acoustic question of the voice exhaustively. It is in perusing the works of such eminent scientists that the philosophy of sound will be made clear. There we will learn the distinction between a musical sound and a mere noise. Now musical tones produce a charming effect upon the ear, as do the tones of all beautiful musical instruments. Such sounds reach the ear in regular or rhythmic waves, whereas the mere noise, no matter what its nature may be, produces the opposite effect; its tone-waves are irregular and confused, and grate more or less on the ear, according to

their more or less disagreeable characteristics. We shall also gather from the study of the works of the physicist the composite elements of sound, what constitutes tone-waves, fundamental and overtones, etc. To this effect I would earnestly advise my readers to read carefully Chapter II. on the acoustics of the voice, by Dr. Cohen, in his interesting work, "The Throat and Voice."

But where are we to look for the light that will lead us to discover the perfect musical tone without the direct aid of science? For history attests that great singers did flourish before the discovery of the laryngoscope, as well as before the scientific discoveries of a Tyndall or a Helmholtz.

Has nature not furnished us with a simple yet sure guide to find the perfect tone-condition? It is a law as old as nature that it always provides the means to an end; and thus nature has provided us with an infallible means to perceive the perfectly satisfactory throat-action or the

normal mechanism of the laryngeal muscles, resulting in the absolute, correct tone-production; and such tone is to be discovered from a positive and clear knowledge of the correct articulate action of the glottis. This marvelous vocal mechanism can readily be discerned and acquired, even by the most illiterate and simple-minded person, under the proper guidance; and the pursuit of such knowledge constitutes in reality the art of tone-building, an art, I am sorry to say, which is not much better known among singers than the mysterious workings of electricity among the people.

Let us now inquire what preliminary steps lead to such perfect glottic action, what constitutes it, and what forms of glottic articulation are incorrect.

The preliminary steps which lead to the discovery of the perfect articulate action of the glottis are threefold:

1. A correct knowledge of the breathing mechanism.

2. An understanding of the nature of any obstacles to the free emission of the full tone-wave and the removal of such obstacles. And

3. The right meaning and proper emission of the musical sound-wave.

Of these the correct breathing mechanism has been already considered at some length, and need, therefore, not be repeated.

Sometimes the obstacles to the free emission of the full tone-wave are to be traced to the pathological condition of the vocal cords. If the latter are diseased, as, for instance, swollen or congested, they will be unable to produce regular or rhythmic tone-waves. These will be wanting in roundness, fullness, and evenness. Other obstacles to the production of the full sound-wave are to be found in the disproportion of the breath-action, as applied to the muscular action of the vocal ligaments.

If not enough breath is used to induce correct phonation, the result will be a weak, unsustained tone, or approaching the falsetto in character. This condition may also result from a weak, undeveloped and untrained larynx, independent of the breath-action, and must be gradually strengthened by judicious practice.

If on the other hand the impact of breath against the glottis is too powerful, the tone will be pregnant with false overtones; the character of the voice is thus strained, and the normal condition and relation of the resonant cavities of the voice, namely the pharynx and mouth, is altered, and as such the latter will lose proportionately its musical quality; hence, false overtones will predominate, and the tone of voice will be thin, harsh, or muffled.

The correct breathing mechanism leads to the discovery of the sonorous tone-waves issuing from the vocal cords in isochronous vibrations, as they are trans-

mitted through the resonance chambers. The degree of power of the vocal sound-wave depends on the force of the proper expiration impinging against the vibrating reeds, and upon the length, the elasticity, and physical condition of the latter; and also on the anatomical construction, physiological and pathological condition of the laryngeal, pharyngeal, nasal, and oral cavities.

The correct tone-wave produces a sensation of air-waves filling pleasantly, yet completely and compactly, every nook and corner of the throat and mouth, and imparts to the singer a feeling of great satisfaction, evincing, as it generally does, a harmonious relation between the breath and the vocal cords, resulting in freedom of emission; and these altogether prove the correct use of the voice. Such tone-condition alone is capable of expressing musical sentiment; likewise, the full sonorous sound-wave, which depends, as before stated, on a favorable anatomical construction of the

larynx, and the resonant capacities of the surrounding parts, brings about the true ring, resonance, or timbre, which characteristic constitutes individuality of voice, distinguishing one singer from another in tone-quality.

However, before the perfect tone-quality is realized, it is generally conceived or previously idealized in the mind. But such æsthetic gifts, like all kindred mental endowments, are unequally bestowed; hence the various grades of vocal talent. But the voice-builder, who is possessed of a perfectly cultivated voice, singing consequently the true musical tone, will often be able to substitute in his pupil his own clear knowledge of tone, and hence the latter will copy or imitate a proper quality of voice which mentally he could neither idealize nor realize. In other words, if the teacher possesses a vocal organ which, from assiduous and analytical study, he has brought under perfect control, both in point of tone-quality and of

vocal technique, such polished vocal utterance presents itself to the scholar as a standard of vocal excellence, for him to copy or even to excel. Now, if the axiom be true, that experience alone teaches, how otherwise could the master dispel the darkness of ignorance in the mind of his pupil, except with the sunlight of his own clear practical knowledge?

The marvelous purity of tone and finish of execution of the two greatest singers that ever visited our shores during my recollection, were in my opinion, Nilsson and Santley; they have ever been my ideals of pure lyric art. Their vocal interpretations, whether in oratorio, opera, or concert-room, are still fresh in my mind; and many of my readers, no doubt, have lingering recollections of the marvelously finished and truly artistic school of these grand interpreters of song divine. Would our modern vocalists and public singers were all as noble followers, as worthy representatives of the glorious lyric art!

Articulate Action of the Glottis.

The articulate action of the glottis consists in defining or dividing, yet connectedly, and in a perfectly smooth manner, each individual note of a series of two or more successive or communicating intervals, with the perfect, unchanging, though naturally modifying tone-quality; and as distinctly, yet much more evenly, than the most graceful reader does articulate each successive consonance of a polysyllabic word, or a sentence. In other words, it is the perfect legato sostenuto of vocalization (colorature of the Italian school) whereby one interval succeeds another smoothly yet firmly, ever preserving the perfect tone-quality, the same which is characteristic of the clear execution of a Wilhelmj or a Joseffy, or any other first-class instrumental performer. It is this same neat and finished vocalization which distinguishes a Nilsson or a Santley, and I may now add a Campanini, and many more acknowledged vocalists of superior

skill. This exceedingly interesting knowledge of glottic-action, which imparts to the vocalist an unerring standard of correct breath-action and of proper control of the vocal cords, might not improperly be compared, so far as the muscular adjustment between the breath and the vocal cords is concerned, to the mechanism of the well-regulated time-piece. The breath-power would be represented by the spring; glottic-action, throbbing gently but rhythmically its vocalized intervals, to the regular tick or click of the escapement.

The click of the glottis in vocalization must not be confounded with the stroke of the glottis. The former, as above stated, refers to the articulate action of the glottis, which, in this process of the vocal mechanism, divides one interval from another in scale-singing, and yet connects, at the same time, such interval in a most classic manner. The latter, or stroke of the glottis, has reference simply to the attack, the striking or intoning either of

a single or separate vowel sound, or the vowel which begins a vocalized passage or phrase, and is hereafter to be more particularly described.

When the articulate glottic-action in rapid execution is perfect, the vocalist has reached the *ne plus ultra* of his art in the matter of vocal technique, for it is the result: of the exact proportion of breath-impact on the cords in singing; of the most perfect adjustment of the laryngeal muscles during phonation; and of the complete control of the various muscles of the resonating cavities, or vocal reflectors, which henceforth offer no longer the slightest obstruction to the full and free emission of the sound-wave.

Furthermore, such vocal mechanism enables the singer to increase at will the tone-power, without departing from the perfect tone-quality, and without losing the consciousness of the reserve power. Such voice-control teaches the vocalist to

emit every vowel sound with the free and unimpeded sound-wave; and if to the above is added a distinct consonant-articulation, which, in its action or mechanism, shall not for a moment impair the pure, round vowel sound which accompanies consonants in syllabisation, a vocal utterance is attained which constitutes perfect voice-control. Without the above clear and practical knowledge, the slightest vocal ornament, from the simple grace note to the trill, can seldom be accurately executed. But when, on the other hand, the singer has mastered the correct glottic-action, his voice embodies all the requisites of a perfect instrument artistically handled: the articulate glottic-action stands in lieu of the keys of the musical instrument; the resonance chambers of the voice are represented by the body of the same instrument. Nothing further is to be added except musical knowledge and intelligence on the part of the artiste to make his profession a success. Strictly

speaking, when the master has taught his pupil the above-described method of vocal technique, his responsibility, so far as tone-forming or tone-building is concerned, ceases. It is then that the talents of the vocal aspirant, in the measure with which nature has endowed him, will reveal themselves.

After the requisite vocal decorations have been mastered by the above-described mechanism, the choice of vocal compositions to be interpreted must be selected with a view to his peculiar musical inclinations and mental ability, and the degree of art with which he will interpret them will gauge his mental caliber.

Musical expression is the offspring of thought and breath-power, not of feeling, except indirectly, and consequently results from a vocal organ capable of producing the most varied tone-colorings. There are, therefore, two essential requisites which constitute the great singer: unusual vocal powers, under perfect control; and equally

superior mental endowments heightened by a thorough musical education.

Many of my readers, unacquainted with the possibilities of the fine muscular adjustment of the larynx, may possibly consider my ideas on glottic-action altogether utopian or at least theoretical. But if it is true that scientific explorers find that there seems no end to nature's prolific wealth of resources daily discovered or better understood, then it will perhaps be admitted that the importance attached to glottic-action may not be chimerical. If it is chimerical, then Nilsson's wonderful technique, the real cause of her success, is also a myth. But, in order to convince my sceptics, I would ask them to read carefully the following well-nigh incredible tale; and, were it not absolutely authenticated, it would certainly seem utopian.

Dr. Cohen, speaking of the wonderful precision and almost inconceivable deli-

cacy of adjustment of the vocal bands, relates the following: "The automatic control of adjustment attained by Madame Mara, whose voice had a compass of three octaves, is said to have been such that she could effect as many as twenty-one hundred changes in pitch, 100 between each two notes of the 21, in her compass. The ordinary capacity of a voice in good culture is stated to be equal to about two hundred and fifty changes; ten or more for each tone of the compass of two octaves, or a little beyond. As each change in the tension of the vocal bands would not vary their length more than one fifteen-hundredth part of an inch, we can faintly estimate the extreme delicacy of adjustment of tension of which the muscular apparatus of the vocal organs is susceptible; a delicacy greatly in excess of that acquired in the trained fingers of the most skilled workman.

In Madame Mara's case, the variations of tension between the tones that she

could produce would represent a successive lengthening and shortening of the vibrating edges of the vocal bands in successive proportions of one seventeen-thousandth of an inch—a marvelous and almost inconceivable delicacy of precision of touch.”

The knowledge of this beautiful mechanism, the perfect use and control of the click of the glottis, which might be styled the highest refinement of vocal execution, is to be attained and consolidated ultimately by a most careful and conscientious study of the proper vocalises, directed by the competent master. These vocalises must be executed with the steady aim to reach and firmly establish the habit of the right glottic-action. When such vocal mechanism or technique is acquired, the singer has assured the only possible correct method of singing. Possessed of the mastery of such a technique, vocal execution is no longer an acrobatic performance on the brink of a precipice. A vocalist will never fail to be

appreciated and rightly judged by the knowing ones, when scanned from such high standpoint of art; his true value and merit will soon be duly discerned and justly appreciated. For how could any injustice be done the singer, except by the ignorant pretender in matters of lyric art? Is there any underrating or overrating possible when the artiste is weighed in the balance of a mathematically exact vocal technique?

Such a standard of vocal precision should be the aim of every vocal scholar, and should be taught exclusively by voice-builders, if either desire to establish fruitful results for their endeavors. I am not advancing any strange theories. Is not the self-same method of teaching advocated and adopted by all the great instrumental performers, and taught by all the great masters? What difference is there between the delicate and marvelous touch of a Joseffy or a Wilhelmj, and the masterly breath-control guiding that most wonder-

ful tone-producing apparatus, and execution of a Nilsson, a Santley, or a Campanini? But alas! alas! What amount of serious and intelligent attention is generally devoted to lyric art nowadays? Let the vocal student ask a Nilsson, a Trebelli, a Santley, a Faure, or a Campanini. Let him also ask a Wilhelmj or a Joseffy, how many years of conscientious application they have spent in mastering their respective instruments? To-day, six months or thereabout, one lesson a week, perhaps, say, in all twenty lessons, and many benighted parents think that ought to be quite sufficient to make their son and daughter distinguished vocalists.

Dr. L. Browne, quoted elsewhere, says, quite to the point: "Forming the voice or placing the voice means nothing more than the practice of scales on a right method, and such practice formerly extended over many years; but in these go-ahead days of steam and money-making about as many months' pupilage is con-

sidered sufficient for the preliminaries of lyric art. To attempt florid passages before such practice has been thoroughly carried out is as futile as to attempt to draw from the life or to color, before one can make straight and curved lines in black and white. It is astonishing how perseverance on a right method will make an agreeable and effective voice out of a naturally poor organ."

Sims Reeves, the famous English tenor, speaking of the natural musical ability of Englishmen and Englishwomen (and the same may be said of our American ladies and gentlemen), says: "We have the raw material in plenty. We have a large stock of native energy and quickness of perception. But our very facility is apt to be our bane. Hard work and the aim after perfection are often lacking among us, and hence our musical artists too often fail to attain the highest results."—*Cook's Musical Journal*, February, 1881.

It would be safe to assert that no singer

can have an adequate conception of correct glottic-action, unless he or she can practically illustrate such vocal mechanism in his or her throat in singing; neither have I any doubt that there will be found in the musical profession persons who will either consider this vocal technique the offshoot of some absurd theory, or the outgrowth of some sickly imagination or wild enthusiasm.

But how can any one speak intelligently concerning that which he does not know? Consequently, how can any man teach singing, or talk knowingly about this art, which implies tone-forming and vocal ornamentation, except he knows himself practically and analytically the science of tone-forming and tone-coloring? Mr. Theodore Thomas says in *Scribner's* for March, 1881: "On the principle that no person can teach another what he cannot do himself, (a principle which I believe in, to a great extent,) I hold to the opinion that the teachers of singing should themselves be singers, with a good method."

Yet in another monthly, "The Voice," for February, 1881, I read a statement flatly contradicting Mr. Thomas. Mr. George T. Bulling says: "The truth is, the instructor in vocal culture need not be a vocalist in order to be a good teacher."

If Mr. Bulling errs in the above assertion, he is quite right when he says: "The art or science of teaching is a special gift;" and again: "A person may sing well naturally without being able to account scientifically for his various modes of tone-production." Again the above gentleman very pertinently remarks, that: "the simple guarantee that a man is a musician is no earnest at all that he is competent to teach voice-development."

If the above important truism were universally admitted and adhered to, many skillful instrumental players would not so readily assume to teach vocal culture, of which they often possess but the vaguest notions.

Mr. Charles Lunn in his "Philosophy

of the Voice," says: "That oratory should have fallen, is the natural result of ignorance in these matters, and that it will continue a rare and accidental thing is equally true, until the false theories of fanciful musicians be rejected, a true basis supplied by scientific men substituted in their stead, and voice-training be recognized as a separate and distinct field of action."

As my readers have already noticed, I attach to the stroke of the glottis, the intoning process, a different meaning from that which is often understood. The click of the glottis and the stroke of the glottis are two distinct vocal factors, and should not be confounded. By the stroke of the glottis is meant the act of intoning a vowel not preceded by a consonant; it is the muscular action or mechanism of the glottis striking or intoning a separate vowel-sound only, such as occurs in all staccato exercises, or, in singing, for instance, vocal exercises or vocalises with the vowel ä;

each phrase begins with the latter vowel, and when it is struck or intoned it is done by a stroke, a sharp or sudden meeting of the edges of the vocal cords. Whereas each connected interval of the vocalised phrase, after the *ä* has been intoned, is then more or less distinguished or neatly defined according to the degree of perfection attained in producing the click of the glottis and this phonetic action is much more gentle than the stroke of the attack, which latter may be more explosively rendered.

But even, the very simple muscular action of the vocal process in intoning with the stroke of the glottis is not always rightly understood nor correctly practised, and needs therefore some elucidation.

There are three forms of the stroke of the glottis in vogue among vocalists:

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| 1. The spasmodic | } stroke of the glottis. |
| 2. The aspirate | |
| 3. The normal | |

1. *The spasmodic stroke of the glottis.*

This faulty method of intoning a vowel

sound consists in unduly contracting the laryngeal and pharyngeal muscles, apparently producing the physiological conditions of a slight spasmodic cough. Such intonation being generally overdone, on account of its harsh and pinched nature, is unmusical; and moreover will not infrequently produce temporary hoarseness. It is not difficult to perceive how such unnatural throat-contraction must irritate the parts concerned. Let us take, for instance, a staccato exercise executed with this spasmodic attack; what else would it be but a continued miniature coughing spell?

The remedy for this defective method of intonation is to be found in studying to attain a more quiet and easy manner of emitting the vowel sounds. This will be easily accomplished by allowing the very smallest amount of breath to escape previously to the meeting of the edges of the vocal cords, in intoning the vowel sounds, as for instance in the word, ha! The action of the muscles of the larynx, after the

prefix *h* has been expired, will normally intone the vowel *ä*. The pupil's attention should be called to this latter functional movement of the glottis, and he should then learn to omit as soon as possible, the aspirated *h*, and attack henceforth all vowel sounds with the proper stroke of the glottis.

2. *The aspirate glottic-stroke,*

As the term implies, consists in habitually prefixing to all single vowels, as well as in vocalization in general, an aspirate.

3. *The normal stroke of the glottis,*

consists in adjusting the edges of the vocal cords by the proper breath-impact, so as to emit at once a clear and neat musical tone, without the slightest undue effort, nor the least expiratory waste. Thus the correct stroke of the glottis has an immediate effect on the articulate glottic action. The excellence of execution of any vocal decorations, such as scales, roulades, fiorituri, or trills, also depends in a great meas-

ure on the stroke of the glottis, because the proper attack secures the required breath-impact to execute successfully any vocal ornaments. The throat-conditions unfavorable to glottic articulation are to be traced almost invariably to the faulty methods of breathing as manifested in the following tone-conditions; such are:

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|---------------------------|----------|
| 1. The tremolo | } voice. |
| 2. The nasal, | |
| 3. The guttural or throat | |
| 4. The wiry or harsh | |

and 5. the uncultivated voice in general, evincing breaks or weaknesses called registers.

1. *The tremolo voice.*

What produces tremulous singing? Mr. Emil Behnke, mentioned elsewhere, in his attempt to explain how a weakness of the muscles of the diaphragm produces the tremolo voice, says: "Owing to the abdo-

men being drawn in, the midriff (diaphragm) never properly contracts; the muscles are not sufficiently exercised, and consequently have not power enough to resist the pressure that is brought to bear upon them in singing. They tremble, and this trembling being communicated to the lungs, which are resting upon them, the stream of air they give forth loses its evenness and continuity, with the result just stated."

I beg to differ from Mr. Behnke concerning the real or immediate cause of the tremolo. The weakness of the muscles of the diaphragm, no doubt, may be a remote cause of vocal tremulousness. But the immediate cause is simply to be traced to the peculiar action of the vocal cords during an improper, inefficient, and feeble expiration. For if the expiration is effected in a spasmodic manner, owing to an incomplete air-supply in the lungs, the vocal cords cannot be thrown into normal nor rhythmic vibrations; and if there is added

to this factor, incomplete and clavicular breathing, too infrequent inspirations, by which the chest supply of air is obtained, and the elements of nervousness and lack of confidence which proceed from the consciousness that the chest is incompletely filled, together with the sense of exhaustion which must follow the constant expulsive effort of the singer; it may be more reasonably supposed that these causes might more likely produce the fluttering tone called tremolo, than would the remote or more or less hypothetical cause advanced by Mr. Behnke.

Moreover, experience has taught me that tremolo singing is to be attributed to faulty breathing mainly, if not exclusively, because the proper vocal exercises, guided by the correct breathing method, have invariably cured the tremolo defect, and brought about, in its stead, a regular and even outflow of tone.

2. *The nasal voice.*

The nasal quality of voice, aside from organic causes, is produced when the palate-veil, or soft palate, fails to contract and lift itself sufficiently upward and backward against the pharyngeal wall, but on the contrary sags down. Moreover, if these faulty physiological movements are accomplished with a muscular raising of the base of the tongue, it is easy to perceive how the tone-wave issuing from the larynx will be diverted from its natural course through the mouth, but will be forced proportionately through the nasal cavities, and will thus produce the unmusical sound known as the nasal voice.

The remedy to this defective utterance is to be found in reducing the tongue to absolute passivity and in imparting to the vocalist a clear idea of purely musical tone; this will enable him to impart to the vowel sounds that clearness and purity which will force the soft palate to contract.

It is scarcely necessary to mention that

when the velum or fauces are sore, all vocal practice should cease for a time, till the normal condition is restored. Persistence, under such circumstances, in using the voice will only tend to aggravate the inflamed condition of the diseased parts, and will thus often cause the inflammation to spread down the pharynx to the larynx.

Of all the defective methods of tone-utterance or emission, the nasal quality, when only heard in a slight degree, offers little impediment to glottic articulation, but if the back of the tongue is held rigidly, just in that proportion will the click of the glottis be indistinct, or even wanting in vocalization; for the reason that the rigidity of the tongue-muscles will more or less impede the free and harmonious muscular movements of the larynx. This latter organ must at all times enjoy absolute freedom in order to produce the neat and clear glottic articulation, as well as the correct tone-production.

3. *The guttural voice.*

The guttural or throat-voice is produced by an unnecessary or abnormal contraction of the muscles of the neck, throat, and tongue, thus choking in part the tone-emission, instead of looking exclusively for vocal effect to the proper motor-power, breath. Thus the tongue, epiglottis, and pharynx assume a more or less strained and abnormal position.

The base of the tongue is forced more or less stiffly upwards and backwards instead of lying passively in the mouth with its tip gently touching the inner wall of the lower teeth; and differs from the nasal quality, aside from the palate-condition, only in point of rigidity.

It was stated above how an abnormal position of the tongue may influence and modify tone unfavorably; remembering this fact, it is not unreasonable to suppose that the epiglottis, which is the coverlid to the voice-box, its ligamentous attachments to the tongue being taken

into consideration, may, through this abnormal position of the latter organ, be forced from or prevented from assuming its correct position during vocalization, and forced unnaturally backwards by the back-sliding tongue. It prevents the tone-waves from passing out through the partly covered cavity of the larynx; they must be consequently cramped, compressed, and narrowed, and it is no wonder if such tone should appear throaty or thick. It is true that the epiglottis is found in all sorts of shapes, without apparently affecting the tone.

The before-described throat disturbance must be remedied by learning to control the abnormal movements of the tongue, and by cultivating, under the proper tuition, a clear, musical tone-emission.

When the unruly tongue, the cause of no little amount of trouble in singing, acts in the balky manner above described, the larynx will often be forcibly suspended by an unnatural and injurious uplifting ac-

complished by the muscles connecting it with the hyoid or tongue-bones. In this manner the freedom of action of the laryngeal muscles will be impeded according to the degree of the abnormal strain, and this often causes singers to sing below the required pitch, and certainly glottic articulation, which demands such harmony of movements between the breathing and sound-producing muscles, will perforce be disturbed, since the gentle function of the latter is so ruthlessly prevented.

Professor Sieber, whose admirable work "Art of Singing" may be consulted with benefit, mentions a recently-invented throat-voice (quite flourishing just now in this country) which the professor stigmatizes as follows: "For perhaps fifteen years it has been the custom, which is as wanting in beauty as it is pernicious, to lower female voices to a deeper pitch, and this vulgar intonation, which constitutes a second species of throat-sound, has been shamelessly and authoritatively honored with the name

of a special register. This faulty management of the voice consists in a forcible depression of the larynx and a contraction of the pharynx. Tones obtained in this manner, of course, show a greater breadth and power of sound, but are incapable of impressing and inspiring an audience, simply because they are unnatural and forced. Moreover, they injure the voice very greatly, for the reason that they do not admit of any union with the natural chest-voice, but at the point where they cease (most generally at *f* or *g*), always give way to the falsetto. Under such circumstances, the resonance of the latter must appear much diminished, since on the one hand it is resorted to at an improper place, and on the other hand allies itself directly to the bloating tones which should rather be bawled forth by a drunken brawler, than to flow from the lips of a tender maiden."

Nobody will deny that pleasing vocal execution is generally accompanied with great apparent ease, and is charming only

from the absence of all visible laborious efforts. Every teacher knows also from experience that the pupil, in his anxiety to progress, will nearly always overdo his vocal practice, both in intensity and in duration. The overdoing in intensity supposes undue muscular exertion, and if such unreasonable exercise is irrationally prolonged, it must necessarily produce corresponding exhaustion, ultimately resulting in weakness, and finally the pupil, who was once gifted with a good voice, loses all control over it. The muscles of the vocal cords seem 'then to have reached a state of semi-paralyzed condition.

But the aim of all vocal practice consists in establishing perfectly normal relations between the motor-power and the cords; now this result is only to be reached by the absence of all undue efforts; and whereas certain vocal theorists, who rely wholly for success on various muscular movements, may occasionally produce some local benefit, yet in general,

they impart to the pupil an idea that singing is laborious work, and the latter seldom reaches, judging from experience and various instances, the ease of tone-emission which is a charm both for the singer and the listener. Therefore, would it not seem far better, as a general rule, that the vocal scholar were told to think as little as possible about his tongue, for instance, excepting to let it alone and at rest, relying for vocal effect exclusively on the correct breath action? Let my readers inquire of Patti, Nilsson, Santley, or Campanini, whether they were trained to pull about their tongue, and larynx, and to perform all manner of bodily contortions, and utter all sorts of unearthly sounds, during the process of their vocal education? On the contrary, let the vocal student learn to open his mouth with the utmost ease. Let him learn to drop the lower jaw in uttering a tone with the same absolutely unconscious ease, even as the eyelids drop apart, and

let him in this natural way develop any other set of muscles called in play for vocal purposes, in the most gentle manner, ever remembering how quietly nature performs all her normal functions. I desire to impress it on the minds of vocal scholars that any abnormal and strained muscular gymnastics for vocal purposes, as for instance the pulling up and down of the larynx as a whole, apart from its natural movements as in swallowing, etc., must be pernicious, because all such movements are unnatural in singing. The muscles involving the production of the voice are instinctively set to work and their wonderful adjustment far surpasses all human conception and ingenuity. Dr. L. Mandl, in his works: "Treatise on the diseases of the Larynx," and "Hygiene of the Voice," says: "That because the larynx can move in its totality, as in the act of swallowing or in protruding and retracting the tongue, it is proved that the position of the larynx higher or lower is

independent of the highest sound." I will add here that the better the voice is used, the more the larynx keeps its natural place of repose; but on the other hand, the worse the voice is used, the more abnormally acrobatic are its movements. Once more let my advice be to the vocalist to let the jaw, the tongue, the muscles of the pharynx and larynx, also the chest and diaphragmatic muscles, perform their allotted natural functions and movements in the most restful manner possible, so that vocal exercises may not produce any aching sensations in the throat, nor feelings of exhaustion, and the most desirable vocal results will not long delay in forthcoming.

The thick or throaty voice mentioned above, is sometimes caused by enlarged tonsils. These fill up, more or less, the cavity of the throat, and thus present a mechanical barrier to the emission of a perfect tone.

Relief is to be found in excision. But in order to set at rest the popular prejudice against this simple surgical operation, let my readers remember that Adelina Patti had her tonsils cut out, many years ago, and Adelina still sings; and the same is true of thousands of singers. I have advised the operation to many of my pupils, and when it was performed by a skilled surgeon, it resulted always in relieving the throat from the many annoyances caused by the condition; improved also the quality of the voice, and not infrequently added several upper notes to the compass.

When the relaxed or elongated uvula hangs habitually down the throat, irritating or tickling both the base of the tongue and the posterior walls of the pharynx, it causes the well-known hacking cough, which may lead to more serious disorders, and besides, in its elongated state, must it not cut in two the sound-wave passing out

from the pharynx into the mouth; and consequently must it not mar the resonance of the voice? Let no singer or speaker hesitate to have his elongated uvula shortened by the competent surgeon when it is deemed advisable; the operation is painless and the work of a second, never to be repeated when rightly performed. Mine was clipped by one of the most skillful surgeons in the city, if not in America, much to my relief, and benefit to my general health. The resonance of my voice, far from being injured or impaired, was also considerably improved.

4. *The wiry voice.*

The wiry or harsh voice results either from a total disregard of all hygienic laws, or from acute and spasmodic contractile action of the laryngeal and pharyngeal muscles, or from incidental disease of the vocal cords such as occurs in laryngitis.

Apart from any organic condition causing harsh, wiry, shrill, grating tones, rough

or wiry voices often result from continued or excessive use of voice, also from serious dissipations of all sorts, such as the abuse of alcoholic liquors, excessive smoking, etc., etc.

Singers addicted to the unmusical tone in question are usually ignorant of the true vocal mechanism and the correct breathing method. Thus the deficient expulsive power of the breath is compensated by the excessive action of the laryngeal and pharyngeal muscles, which unnaturally contract in order to balance the defective expiratory effort. Vocalization with such throat-action is either rasping or irregular, and of course, anything but melodious, smooth, and musical.

The remedy for such faulty action is to be found in a better apprehension of the breath-action, and in relaxing the throat and vocal muscles concerned, and finally in a clearer understanding of the methods in producing the broader and more musical tone-waves.

The above-described defective methods of using the voice, although varying from the milder to the severer grades, are exceedingly prevalent among singers, and offer corresponding resistances or obstacles to the acquiring of the smooth glottic-action in vocalization. Hence there are many intervening stages leading to the knowledge of perfect vocal execution. The artistic instrumental performer will recollect how crude were his first attempts, how many were the difficulties he had to overcome, and how, through conscientious labor and assiduous application, he rose step by step to the mastery of the beautiful technique, without which the artistic interpretation of the great musical compositions is an utter impossibility.

So it is precisely with the pursuit of vocal studies. The preparatory exercises, if properly taught, should lead to the knowledge of the perfect vocal technique, and voices which have been drilled by the appropriate vocal gymnastics, not only obtain

the mastery of a brilliant execution, but they are capable of expressing with pleasure to themselves, all the possible shades of soul-emotion without ever abandoning the perfect tone-quality. Thus the beautiful adjustment of the laryngeal, pharyngeal, and breathing muscles, reach a state of most charming relations, which the French language beautifully expresses in two words: "Entente cordiale."

But when one judges singers in general, or as they are heard in the concert-room and elsewhere, with few exceptions, the standard of high art which should be their aim, is often conspicuously wanting.

How seldom would the modern vocal technique when compared with the beautiful modern instrumental school, bear the scrutiny of close analysis? In other words, in what light would the average modern vocalist appear, could his faulty execution (apart from the natural attraction of a human voice) be faithfully translated or reproduced (*fac simile*) on a musical instru-

ment? The deficiencies in tone-quality, the want of smoothness, the indistinctness of glottic articulation, the blurring or confusing of the connecting intervals, the improper phrasing, the deficient articulation, etc., etc., all these defects would then stand out prominently in all their crudity. It is not a little discouraging to the true devotee of high lyric art to find as yet so little intelligent appreciation of genuine vocal merit. For it must be admitted the public should take its share of blame in too often helping to lower the standard of vocal art by countenancing on the stage exhibitions of a decidedly low order of vocal talent. Who has not witnessed in the concert-room, how a beautiful face, a stylish dress, coquettish manners, etc., etc., or even a frantic final scream or yell, climaxing some decidedly inartistic singing, will cover all previous vocal deficiencies, and provoke applause from the indiscriminating portion of an audience, when the whole performance

should have been treated at least with silent contempt.

But to convince my readers that I am not over-severe, I will quote the *Herald's* musical criticism of *March* 15, 1881, in support of my ideas. It fell opportunely into my hands on the very day I was writing these pages. Speaking of the tenor's delivery in *Sonnambula*, wherein he had shown unevenness of quality in his work, the able musical critic very pertinently writes as follows: "The fine quality and manly power of his high notes have been frequently referred to in most complimentary terms. This has, it is to be feared, tended to induce him to rely too much on their brilliant effect, and he has gradually been learning to slight the rest of his music to the advantage of an aria and an effective note above the staff. His performance is thus rendered very uneven, and while it (to slightly alter the great poet) 'makes the groundlings applaud, it makes the judicious grieve.'—— There are au-

diences who enjoy and greatly applaud these displays above the staff, and will willingly sacrifice an even performance to occasional vocal pyrotechnics, but their musical intelligence is akin to Dickens' honest but illiterate Joe Gargery, whose reading never went to any greater extent than the picking out of the letters of his monosyllabic name from a printed page, and he was 'oncommon fond of reading too.' 'Give me,' says Joe, 'a good book or a good newspaper and sit me down before a good fire and I ask no better, Pip, old chap. Lord! when you look over the page and you do come to a J or an O, and says you, "Here at last is a J-O, Jo," how interesting reading is!'"

This is the way with an operatic audience of the Gargery type; they don't mind how a tenor slights his concerted music for a solo or a grandly effective high note. "Sit me down," they say, "before a good tenor in a good opera, and when you do come to a B flat or a high C,

‘Here at last,’ says you, ‘is music, and how interesting opera is?’” It is better for an artist to make his performance of an even excellence, even if he fails to “catch the house” with lofty vocal gymnastics.

If it is difficult to give on paper an adequate idea of voice-description, even in general, or of the correct glottic action in particular, it is not more easy to enter into the minute characteristics of the various faulty methods of vocalization, which must be heard in order to be properly appreciated.

The leading features of faulty glottic action are:

- | | |
|------------------|-------------------------------|
| 1. The aspirated | } methods of
vocalization. |
| 2. The forced | |
| 3. The jerky | |
| 4. The rolling | |
| 5. The blurred | |

1. The aspirated method of vocalization consists in prefixing the aspirate *h* before the vowel *a* or any other vowel in

singing scales or vocalises, and pronounce *ha* instead of the simple vowel *a* in passing legato from one interval to another. Thus the click of the glottis cannot be heard, since a different vocal mechanism, almost wholly partaking, apart from the aspirate, of the nature of an attack or stroke of the glottis in intoning; and this stroke is substituted for the legitimate click of the glottis in vocalization. This is so common a method of vocalization, that nearly ninety-nine per cent. of the singers are addicted to this vocalizing process.

2. The forced, rigid, or stiffly contracted manner of singing vocalises, is necessarily a very coarse and unrefined method of execution. It consists in an excessive use of muscular power, straining the action of the vocal cords, while attempting to pass from one interval to another, in legato passages. Thus the transition from one interval to another, instead of being smooth, is rasping or hitchy. Moreover

such rough method of singing is almost always accompanied with an excessive and injudicious use of breath. As a matter of course, it precludes normal glottic action, since the undue muscular strain impedes the natural and gentle movements of the vocal muscles.

3. The jerking vocalizing process consists in usurping the legitimate click of the glottis by a spasmodic jumping process of connecting the intervals of a scale, without however wholly severing or disconnecting the successive intervals. This latter method of singing is much in vogue in the modern Italian school and is conspicuous for its lack of smoothness in vocalization and its want of purity of tone in execution. All such crude methods of vocalization are not only unsatisfactory because inartistic, but they often are productive of hoarseness.

4. The rolling method of vocalization takes place when one note succeeds another with a superfluous outflow or waste

of breath, and producing unsustained or weakly sustained tones, which as before repeatedly stated, should always be upheld or checked by the breath-retaining muscles. Such vocal action is faulty from a want of the properly governed breath-impact on the cords; such singing is exhaustive instead of strengthening, because a large portion of the expiration escapes unvocalized, often producing feelings of physical debility, or also unpleasant sensations of dizziness.

5. The blurred or slurred method of vocalization, the coarsest of all vocal attempts, consists in slurring or sliding through, or running together the intervals of a scale or run, without the possibility of distinguishing the separate intervals which compose it. Slurring whole scales or runs without properly marking or delineating a single interval distinctly, is too absurd a mode of execution to deserve even to be mentioned.

5. *The uncultivated voice in general evincing breaks or weaknesses called registers.*

Mr. Leo Kofler, in an interesting paper on the "Old Italian school for singing," published in "The Voice" for March, 1881, says: "We must keep in mind that nature is not a singing teacher. She furnishes ample means for the singers but she herself does not train them. Therefore, whatever breaks and cracks are found in an untrained voice, or what is a great deal worse, in a voice wrested by the three-register system, we must not impugn nature."

One of the mistakes which writers on the subject of registers have made, is that they examine with the laryngoscope exclusively the physiological changes of the vocal cords as the voice runs through all the successive notes of its compass, and they neglect to discriminate not only whether such tones were abnormal and how far unnatural or strained, but they

also neglect to examine the physiological movements or abnormal changes of the resonating cavities of the vocal organs, which latter possess largely the faculty of so modifying or changing the quality of the issuing tone-waves, that each successive note of such a scale might as well be taken for a fresh register.

I will venture to state, and this result should be required of every vocal teacher or voice-builder, that any voice possessed of the following conditions, will not give any evidence of breaks or cracks. These are:

The perfect adjustment between the breathing mechanism and the sound producing muscles.

A thorough control of the muscles influencing the resonating cavities of the voice.

An intelligent and realized apprehension of the true musical tone-wave.

There is no question in my mind that the misunderstanding or the misapplying of the motive-power breath is at the root

of all defective vocal delivery, as far the quality of the tone is concerned. If the expiratory effort is spasmodic or strained, would it not naturally follow that the laryngeal muscles, as well as the general throat condition, would be irregularly governed, in accordance with the principle, that a like cause begets a like effect? Whereas, if from judicious and correct control of the vocal apparatus, the most harmonious relations are made to exist between the breath and the vocal cords, then there is no longer any excess of action in either, one way or the other; neither in too much nor too little expiratory force for the musical expression desired; nor in too much, or too little strain on the laryngeal muscles for the acoustic results desired. Hence an even outflow of tone under perfect control, is obtained which can be maintained throughout the whole compass; and this condition must do away with breaks or cracks, and sap the false theories of registers.

Charles Lunn, author of "The Philos-

ophy of the Voice," after a rather sarcastic review of the register theories as upheld by writers as distinguished as Signor Garcia and Madame Seiler, says: "But jesting apart,—to diagnose an ugly, unmusical tone, that being falsely produced, is readily 'found to be too fatiguing' and therefrom deducing fixed laws, is about as sensible as taking a cripple to represent the human race in its most perfect state, and deducing laws from his distorted state."

Has it not been made clear that when the improper method of breathing produces an irregularity of movements in the laryngeal muscles, that such irregularity will most naturally be participated in by the muscles which govern the action of the resonating cavities? Hence in the process of strained scale singing, and there is not a singer in a thousand who is not more or less guilty of some more or less over-straining, a point must be reached when the abnormal contraction or rigidity must give way, in order to reach a higher

note or range of notes; then, the quality of the tone suddenly changes, simultaneously with the physiological changes of the resonance cavities, be this ever so slight, and a break occurs. But if the vocal cavities left naturally free and passive, together with a skillful usage of breath, have reached a state of easy, unfelt passive-activity; presenting a generous outlet for the full, unrestricted tone-waves, all of which constitutes a state of anti-straining, a proper physiological throat-condition is obtained by which the tones will pour out with an ease and volume that will not encounter any obstacles, and thus scales will be run up without cracks or breaks or impediments, and instead of the so-called registers, there will be distinguished nothing more than the natural and necessary modification of tones such as is heard in all scientifically constructed musical instruments.

Where opportunity was given me, and there is no lack of it, I have never failed to correct sooner or later or prevent in fresh

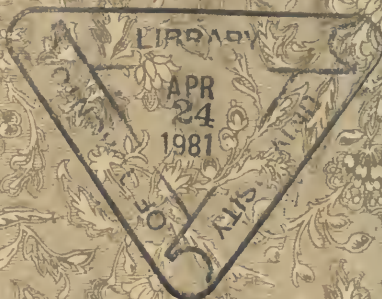
voices the disagreeable breaks which usually occur in voices trained, or rather disfigured or deformed by the three-register system, in the first place by never mentioning a word about registers; secondly, by showing the pupil very clearly how to manage his breath, and by imparting to him a clear idea of the correct musical tone. As soon as the pupil is able to produce that tone, he quickly perceives the relations between the above vocal agencies, namely, breath and tone; uncertainty and nervousness soon vanish, and he then feels confident of his vocal powers, scales are sung smoothly, and he becomes quite convinced that there is not the slightest necessity for all such unmusical changes as occur in voices trained on any other principle. But unless the teacher can practically show his pupil in his own properly cultivated voice, how he himself can sing scales without breaks, he must not expect any results in this particular. for how can he clearly explain to his pupil that which he is himself incapable of executing.

But to sum up; when the physiological requirements of the correct vocal mechanism have been thoroughly fulfilled, the tone of voice will no longer encounter obstacles to its free emission, and will accordingly issue forth from the vocal cords in the larynx, spreading its full sonorous tone-waves compactly throughout all the resonating cavities, which now have become, as it were, happy recipients and promoters of the musical sounds; and if such physiological condition is maintained, the vocalist will be enabled to sing throughout the compass of his voice without breaks. Thus all signs of registers vanish, and there is left to him an organ capable of imparting to his soul more exalted and unalloyed pleasure than the whole world could bestow.

If, kind reader, you will grant that I have contributed to vocal science my promised little mite, I will consider myself amply repaid.

33 UNION SQUARE, NEW YORK, Dec. 4, 1881.





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